

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES H. BEECH, Jr., DOUGLAS MILLER, JORGE L. SOTO,
JAMES A. STOOS and ALBERT H. WU

Appeal No. 95-4665
Application No. 08/101,111¹

ON BRIEF

Before JOHN D. SMITH, OWENS and WALTZ, **Administrative Patent Judges.**

WALTZ, **Administrative Patent Judge.**

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 1 through 3 as amended after the final rejection (see the amendment dated Oct. 20, 1994, Paper No. 7, and the Advisory Action dated Nov. 17,

¹ Application for patent filed August 2, 1993.

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1994, Paper No. 8). The appeal of claim 4, the only other claim in this application, has been withdrawn by appellants (Brief, page 1).

According to appellants, the invention is directed to a technique for recovering diisopropyl ether (DIPE) from a reaction effluent stream produced by the hydration of an olefinic feedstock (Brief, pages 1-3). Claim 1 is illustrative of the subject matter on appeal and is attached as an Appendix to this decision.

The examiner has relied upon the following references as evidence of obviousness:

Harandi et al. (Harandi)	5,113,024	May 12, 1992
Beech, Jr. et al. (Beech)	5,138,102	Aug. 11, 1992

Claims 1 through 3 stand rejected under 35 U.S.C. § 103 as unpatentable over Beech in view of Harandi (Answer, page 3).² We reverse this rejection for reasons which follow.

OPINION

² The final rejection of claims 1 through 4 under the first and second paragraphs of 35 U.S.C. § 112 has been overcome by the amendment after the final rejection (see the amendment dated Oct. 20, 1994, Paper No. 7, and the Advisory Action dated Nov. 17, 1994, Paper No. 8).

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The examiner applies Beech for the teaching of the basic olefin hydration and etherification reaction (Answer, page 3). The examiner finds that Beech differs from the claimed subject matter in that Beech does not disclose the "last step of distilling the product to recover a dry ether." (Answer, page 4). Therefore the examiner applies Harandi for the teaching that purification of ether by distillation to obtain a dry product is well known (*Id.*).

Appellants assert that there are two essential differences between the claimed recovery technique and the process of Beech, namely, the recovery of stripped C3 recycle components and off-gas purging, and DIPE product recovery with low water content by distillation (Brief, page 4).

The examiner's Answer addresses the difference between Beech and the claimed subject matter with regard to the final distillation recovery (Answer, page 4). In the statement of the rejection in the Answer the examiner fails to address the claimed limitations regarding the other difference between the Beech process and the process of appealed claim 1, i.e., the recovery of stripped C3 recycle components and off-gas purging. In response to appellants' arguments, the examiner

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concludes that the individual steps recited in the claims on appeal "taken alone and in of themselves would NOT be considered novel to one of ordinary skill." (Answer, pages 4-5).

It is well settled that we must give effect to all claim limitations. *In re Angstadt*, 537 F.2d 498, 501, 190 USPQ 214, 217 (CCPA 1976), and cases cited therein. The examiner has not proposed any factual basis to support the conclusion that the individual claimed steps "would NOT be considered novel to one of ordinary skill." (Answer, page 5). The examiner noted in the final rejection that Beech shows a stripper **30** which has the same function as the stripper in appellants' claims (Paper No. 6, page 3). However, the examiner has not pointed to any disclosure or teaching in Beech or Harandi regarding the treatment steps of the overhead vapor stream coming from stripper **30**, i.e., the steps recited in appealed claim 1 including cooling the overhead vapor stream to provide a condensed reflux stream, removing the C₂- light gas components from the condensed reflux stream, recycling the reflux stream to the upper contact portion of the stripper column, and recovering a predominantly C₃ recycle stream from the upper

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contact portion of the stripper column for recycle to the catalytic reactor. Therefore, even if Beech and Harandi were combined as proposed by the examiner, all of the limitations of appealed claim 1 would not be disclosed or suggested to the artisan by the applied prior art.

"Where the legal conclusion of obviousness is not supported by facts it cannot stand." *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967). Accordingly, the examiner's rejection of claims 1 through 3 under 35 U.S.C. § 103 as unpatentable over Beech in view of Harandi is reversed.

REVERSED

JOHN D. SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
TERRY J. OWENS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
THOMAS A. WALTZ)	
Administrative Patent Judge)	

jrg

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APPENDIX

1. In the process for the production of diisopropyl ether by hydration and etherification of hydrocarbon feedstock containing propene, propane and C₂- light gas components, which comprises contacting the feedstock and water in a catalytic reactor containing porous solid acidic olefin hydration catalyst under olefin hydration and etherification conditions, the improvement which comprises:

recovering a liquid effluent stream from said catalytic reactor containing diisopropyl ether, isopropanol, water, unreacted propene, hydrocarbon oligomer by-product, propane and C₂- light gas components;

separating said liquid effluent stream in a vertical stripper column having a lower reboiler portion and an upper contact portion;

recovering an overhead vapor stream containing propene, propane and C₂- light gas components from the stripper column;

cooling the overhead vapor stream to provide a condensed reflux stream rich in propene and propane;

removing the C₂- light gas components from the condensed reflux stream;

recycling the reflux stream to the upper contact portion of the stripper column;

recovering a predominantly C₃ recycle stream from the upper contact portion of the stripper column for recycle to the catalytic reactor;

recovering from the stripper column an ether-rich liquid stream containing said oligomer and isopropanol;

extracting the ether-rich liquid stream with water to remove isopropanols in an aqueous extract stream and recover a wet liquid product raffinate stream consisting essentially of di-isopropyl ether, oligomer and at least 0.2 wt% water;

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distilling said wet liquid product stream to recover a major amount of water from the wet liquid product stream along with residual C₃ hydrocarbons and to recover a dry bottom ether product stream containing less than 0.1 wt% water and at least 3 wt% oligomer.

JENINE GILLIS

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Serial No. 08/101,111

Judge WALTZ

Judge JOHN D. SMITH

Judge OWENS

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DECISION: REVERSED

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or Translation(s)

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Brief or Heard

Technology Center: 1613

Index Sheet-2901 Rejection(s): _____

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